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(54) Printer

(57) A printer enabling smooth loading of roll paper and cut-sheet forms with a simple operation is disclosed. A print head (6) is disposed in a transportation path for transporting a cut-sheet form. A guide frame (17) with a guide member (17a) projecting into the transportation path from the print head (6) is disposed on the cut-sheet form insertion opening side of the print head (6). A platen unit (16) with a platen (33) is mounted to rotate freely, and a frame member (30) is disposed on the platen unit (16). When the platen unit (16) is closed, the guide member (17a) of the guide frame (17) and a guide member (30b) of the frame member (30) touch each other, thus forming an ejection path guiding the roll paper (S) away from the junction with the cut-sheet transportation path. When the platen unit (16) is opened, the guide member (17a) of guide frame (17) and the guide member (30b) of frame member (30) separate, thereby enabling cut-sheet form insertion.

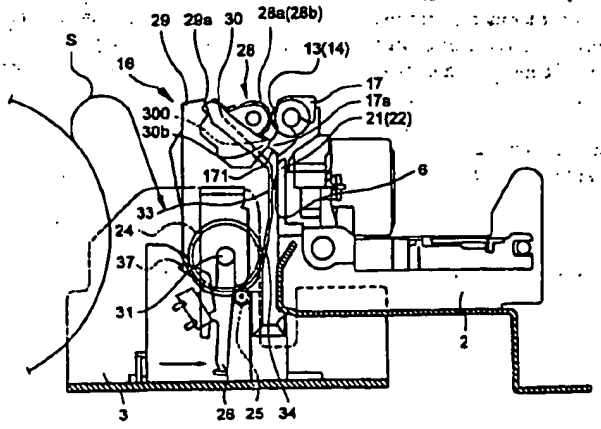

FIG. 4

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Description

The present invention relates to a printer used, for example, with an electronic cash register as part of a point-of-sale system, and relates particularly to a printer capable of printing on both a continuous recording medium, referred to as roll paper below, for journal printing, and cut-sheet forms for sales receipts and validation forms.

Printers capable of printing plural lines on both roll paper and cut-sheet forms are widely available. Typically they use a single printing mechanism for printing on both roll paper and cut-sheet forms as a means of simplifying the printer structure and reducing printer cost.

The transportation path for the roll paper and the transportation path for the cut-sheet forms necessarily partially overlap in such printers, and care must be taken to avoid paper jams and other printing problems. In many cases, cut-sheet forms are inserted from above the printing mechanism, and the area around the printing mechanism is constructed as part of a common transportation path.

Cut-sheet forms have been used more and more in recent years, giving rise to an increased demand for printers capable of printing by means of a common printing mechanism on both roll paper and cut-sheet forms that are inserted to the printing position from different directions. A printer of this type disclosed in JP-A-148963/1992 comprises a movable guide member disposed at a junction between the roll paper transportation path and the cut-sheet transportation path in such a manner that the guide member can be operated to switch the common transportation path between roll paper and cut-sheet forms.

It should be noted that this configuration also makes it possible to prevent insertion of the roll paper to the transportation path for cut-sheet forms.

Problems such as those described below remain, however, in a conventional printer as described above.

In a printer in which cut-sheet forms are inserted from the top, for example, form insertion is made difficult by the narrowness of a gap in the cut-sheet transportation path, mainly the gap between the platen and the printing means. In some cases, the cut-sheet form is printed before it is inserted to the normal printing position, and is thus not printed at the desired location on the form.

To prevent this it is necessary to confirm each time a form is inserted that the form has been properly inserted to the desired printing position before printing commences. Usability is thus degraded.

In addition, the guide member must be operated whenever roll paper is loaded in such printer having a movable guide member, thus increasing the complexity of the loading operation. Furthermore, paper jams occur when the leading edge of the roll paper is not straight and one part of the edge contacts the guide member earlier than another part.

The object of the present invention is therefore to provide a printer in which cut-sheet forms can be reliably loaded, and both roll paper and cut-sheet forms can be smoothly loaded by means of a simple operation.

This object is achieved with a printer as claimed in claim 1. Preferred embodiments of the invention are subject-matter of the dependent claims.

In order to insert a cut-sheet form into a printer embodying the present invention, printing means, such as a print head and an ink ribbon, on the one hand and a platen on the other hand, are moved relative to each other from a first to a second position thereby to open a wide gap between them and to form a straight and wide first transportation path for cut-sheets. As a result, the cut-sheet form can be dropped in easily by its own weight without being caught anywhere in the first transportation path prior to reaching its intended printing position. When subsequently the printing means and the platen are moved back to the first relative position, the guide member is kept outside of the first transportation path by the inserted cut-sheet form, and the first transportation path remains open.

When the printing means and the platen are in their first relative position and no cut-sheet form is present, the guide member closes the first transportation path. As a result, when roll paper (or another continuous recording medium) is loaded in this state, it is reliably guided to the second transportation path. There is no need to operate a guide member, as is required with conventional technology, and the loading operation for the roll paper is extremely simple.

In the embodiment according to claim 2, upon loading of roll paper, when the leading edge of the roll paper happens to contact the first guide member it is smoothly guided to the second guide member. Because of a stepped transition between the two guide members such that the gap of the second transportation path becomes greater in the transport direction, advancement of the roll paper is not obstructed by the second guide member, and the continuous form moves smoothly from the first guide member to the second guide member. Paper jams therefore do not occur during loading of the roll paper, and reliability is improved.

In the embodiment according to claims 3 and 4, guide means are provided for guiding the roll paper and keeping it to the second support means supporting the platen. When the second support means is moved relative to the first support means to bring the platen and the printing means into their second relative position, the roll paper is moved together with the second support means thereby clearing the common transportation path for insertion of a cut-sheet form. Thus, a cut-sheet form can be smoothly loaded despite the roll paper being also present. When the second support means is moved in this way, the roll paper does not move relative to the platen or to its transportation direction. The printing position of the roll paper thus remains unchanged

while a cut-sheet form is inserted and subsequently printed. After an intermediate printing of a cut-sheet form, printing of the roll paper can, therefore, be resumed at exactly the position where it was stopped prior to insertion of the cut-sheet form. Thus, print quality deterioration can be prevented, and high quality printing can be assured.

Operation can also be improved by using a switch or other external signal means to operate the separation means.

Fig. 1 is a perspective view of the overall configuration of a printer according to a preferred embodiment of the present invention with a main cover thereof removed.

Fig. 2 is a perspective view from the back of the embodiment shown in Fig. 1 showing the printer with the platen unit thereof removed.

Fig. 3A is a perspective view of the platen unit in the embodiment shown in Fig. 1.

Fig. 3B is a perspective detail view of the frame member of the platen unit of Fig. 3A.

Fig. 4 is a cross sectional view showing essential components of the preferred embodiment with the platen unit closed.

Fig. 5 is a cross sectional view showing essential components of the preferred embodiment with the platen unit open.

Fig. 6 is a cross sectional view showing essential components of the preferred embodiment with the platen unit closed.

Fig. 7 is a cross sectional view showing essential components of the preferred embodiment with the platen unit open.

Fig. 8 is a simplified view of the essential components of a printer according to an alternative embodiment of the invention.

The preferred embodiment of the present invention is described below with reference to the accompanying Fig. 1 to Fig. 7.

A printer 1 according to the preferred embodiment comprises a printing mechanism, a paper transportation mechanism, and a ribbon transportation mechanism.

A main frame of the printer 1 comprises a base frame 2, a paper transportation frame 3 and a ribbon frame 4, each made by bending and shaping soft sheet steel or other sheet metal, for example. A print head 6 and other components are assembled on the main frame. A ribbon cassette 5 is installed on the ribbon frame 4, which is disposed on the base frame 2 at the front of the printer 1. As shown in Fig. 2, the ribbon cassette 5 surrounds a mounting part 4a of the ribbon frame 4. The mounting part 4a of the ribbon frame 4 also covers the print unit 19 described below.

The paper transportation frame 3 is provided at the back of the printer 1, and a supply of roll paper S is provided near the paper transportation frame 3.

As shown in Fig. 1, a paper transport motor 7 for transporting either roll paper (not shown in Fig. 1) or a cut-sheet form V is provided on one side of the paper transportation frame 3. For transportation of a cut-sheet form V, the torque from the paper transport motor 7 is transferred via gears 8, 9, 10, 11 and 12 to a shaft 15 of cut-sheet transportation rollers 13 and 14, which are disposed near the ribbon frame 4 at the top of the paper transportation frame 3. The means provided for transmitting the drive power from the motor 7 for transporting roll paper will be explained later.

The transportation rollers 13 and 14 are made from rubber or other flexible material for transporting a cut-sheet form. A platen unit 16 is disposed near the transportation rollers 13 and 14. The platen unit 16 is a platen support means and comprises a cut-sheet form pinch roller 28 for holding and transporting a cut-sheet form in cooperation with the transportation rollers 13 and 14.

Fig. 2 is a perspective view from the back of the printer 1 with the platen unit 16 removed.

As shown in Fig. 2, the shaft 15 of transportation rollers 13 and 14 is mounted in a freely rotatable manner to the top of the paper transportation frame 3. A long guide frame 17 as a first guide member made from a resin material is mounted on this shaft 15 with a guide member 17a formed therebelow. The guide frame 17 is constructed in a manner enabling it to rotate through a specified angle on the shaft 15, and the lower part of guide member 17a is pulled by a spring 18 to the back toward the platen unit 16.

Print unit 19 for printing either on roll paper S or on a cut-sheet form V is disposed below the guide frame 17. The print unit 19 comprises a print head 6 for transferring ink from an ink ribbon 20 to the roll paper S or the cut-sheet form V. The print head 6 is arranged to move lengthwise to the ink ribbon 20, which is pulled from the ribbon cassette 5 by a transportation mechanism not shown in the figures. The print head 6 and ink ribbon 20 of print unit 19 together with a platen 33 of platen unit 16 form the printing mechanism.

A holder 23 for loading the roll paper S is disposed on the paper transportation frame 3. The top of the holder 23 is a guide surface 23a having an arc shape substantially complementary to the shape of the transportation roller 24. A roll paper pinch roller 25 pressing against the transportation roller 24 is embedded in the guide surface 23a. As further shown in Fig. 4, a switch 37 used for driving the paper transport motor 7 is disposed below the guide surface 23a and has a roll paper

detection lever extending through the guide surface.

Note, further, that an actuator 27 for driving a lever member 26 of the platen unit 16 is mounted on a side of the paper transportation frame 3.

The structur of the platen unit 16 is shown in further detail in Figs. 3A and 3B.

As shown in Figs. 3A and 4, the platen unit 16 comprises a base member 29, which has formed in its upper part a guide surface 29a for guiding the printed roll paper S. Cut-sheet form pinch roller 28, which is made from resin, for example, is mounted in a freely rotatable manner at a position opposing the guide surface 29a. Pinch roller 28 is a long, cylindrical member at both ends of which are formed pressure parts 28a and 28b for pressing against transportation rollers 13 and 14. The diameter of the pressure parts 28a and 28b is greater than that of the remaining part of the pinch roller 28.

A frame member 30 forming a second guide member and being made, for example, from metal, is disposed in a manner substantially surrounding the pinch roller 28. As is best shown in Fig. 3B, frame member 30 comprises two lateral flange members fixed to base member 29 and connected at the upper end by a cutter part 30a for cutting the roll paper S and at the lower end by a guide member 30b described further below.

As shown further in Fig. 4, the transportation roller 24 for transporting the inserted roll paper S is fixed to a roller shaft 31 and is provided below the base member 29 in a manner enabling free rotation about the axis of the roller shaft 31. A gear 32 for driving the transportation roller 24 is mounted on one end of the roller shaft 31.

A long platen 33 is disposed in the base member 29 parallel to the direction of print head travel and opposing the print head 6 when the print head 6 is mounted to the paper transportation frame 3. A guide support member 34, which is also made from metal in this exemplary embodiment, is fixed to the base member 29 and disposed below the platen 33. As shown in Fig. 3A, guide parts 34a and 34b are integrally formed with guide support member 34 at both lateral ends thereof and extend upward on both sides, respectively, of the platen 33. Referring to Fig. 3A, it is to be understood that guide surface 29a mentioned above starts just above the upper end of platen 33 and is backwardly inclined up to the upper end of base member 29. Guide parts 34a and 34b follow substantially the same path as the guide surface 29a below guide member 30b of the frame member 30 on both lateral sides of guide surface 29a. As shown in Fig. 4 to 7, the gap between guide parts 34a and 34b is slightly increasing towards the upper end of base member 29.

Platen unit 16 thus comprised is attached at both sides of the paper transportation frame 3 by the roller shaft 31 of the transportation roller 24 being supported in a freely rotatable manner by means of bearings 31a as shown in Fig. 1. The base member 29 is freely rotatable on roller shaft 31. The lever member 26 driven by the actuator 27 noted above is mounted in a freely rotatable manner n the end of the roller shaft 31 opposite to the end carrying the gear 32. This lever member 26 is also made, for example, from metal. A tension spring, not shown in the figures, attached to a spring catch 26a on the lever member 26 and a spring catch 29b on the base member 29 causes the base member 29 to turn integrally with the lever member 26 even though the two are rotatable relative to each other. As mentioned before, the lever member 26 of platen unit 16 engages and is driven by actuator 27. Driving actuator 27 causes the lever member 26 and, via the tension spring, the platen unit 16 to rotate on the roller shaft 31 between the positions shown in Fig. 4 and Fig. 5. The tension spring attached to the spring catch 26a and the spring catch 29b provides a pressure force by which pinch roller 28 is resiliently pressed against the transportation rollers 13 and 14 when the platen unit is in the closed position of in Fig. 4.

The transportation path for roll paper S is formed when the platen unit 16 is closed as shown in Fig. 4 by means of the guide member 30b of the frame member 30 of platen unit 16 contacting a top guide surface 170 of the guide member 17a of guide frame 17. At the same time the pressure parts 28a and 28b of the pinch roller 28 of the platen unit 16, and the transportation rollers 13 and 14 of the paper transportation frame 3 are pressed against each other as mentioned above.

When the frame member 30 contacts the guide frame 17, a step is formed in the transportation path for roll paper S between the guide surface 300 of the guide member 30b and the bottom guide surface 171 of the guide member 17a. More particularly, the gap between the guide surface 29a and the guide surface 300 is greater than the gap between the guide surface 29a and the bottom guide surface 171.

When the platen unit 16 is open, the guide member 30b of frame member 30 is separated from the guide member 17a of guide frame 17 as shown in Fig. 5, thereby forming a transportation path for cut-sheet form V.

As also shown in Fig. 1, torque from the paper transportation motor 7 is also transferred via gears 8, 35, 36 and 32 to roller shaft 31 of transport roller 24. A clutch mechanism 40, 41 is provided on one side of the paper transportation frame 3 for selectively engaging or disengaging gears 35 and 36 with or from each other. When a cut-sheet V form is inserted a cut-sheet form detector (not shown) causes the electromagnetically operated clutch mechanism 40, 41 to shift gear 35 out of engagement with gear 36 to prevent the roll paper from being transported when transportation rollers 13 and 14 are driven by motor 7 to transport the cut-sheet form.

A printer exemplary of a preferred embodiment of the present invention as described above provides excellent ease of assembly because transportation roller 24, pinch roller 28, guide support member 34,

frame member 30 etc. are pre-assembled to platen unit 16 and then the platen unit is mounted on the main frame of the printer. In addition, a transportation path for the roll paper S can be formed with good precision because there is no deformation of parts during assembly, and roll paper S can therefore be reliably loaded.

Printing to roll paper S and a cut-sheet form V, respectively, with a printer according to the above preferred embodiment of the present invention is described next.

Printing to roll paper S is described first with reference to Fig. 6. In this case the actuator 27 is driven to press the pressure parts 28a and 28b of pinch roller 28 of platen unit 16 against the transportation rollers 13 and 14 of the paper transportation frame 3, and set the guide member 30b of the frame member 30 of platen unit 16 against the guide member 17a of the guide frame 17 of paper transportation frame 3. This closes the insertion opening for cut-sheet form V.

The leading edge of the roll paper S is then inserted to the transportation path for roll paper S, whose entry part is formed by the base member 29 of the platen unit 16 and the guide surface 23a of the holder 23. When the leading edge of the roll paper S depresses switch 37, paper transport motor 7 is driven, causing the transportation roller 24 to rotate in the direction of the arrow, and thus pulling the roll paper S toward the pinch roller 25. The roll paper S is then held between transportation roller 24 and pinch roller 25. As the transportation roller 24 continues to turn, the roll paper S is transported through a gap or channel formed between base member 29 and guide support member 34 up to and past the platen 33 and then on guide surface 29a to cutter part 30a of frame member 30 to complete loading the roll paper S.

In the present exemplary embodiment of the invention the opening into the transportation path for cut-sheet forms V is closed when the guide member 30b of frame member 30 contacts guide member 17a of guide frame 17. The roll paper S can thus be loaded and transported smoothly without a paper jam occurring even when the leading edge of the roll paper S is not cut straight, that is, for example, when the leading edge has a narrow tongue projecting forward from the middle of the paper, and when the sides of the leading edge of the roll paper S are constricted by the guide support member 34, causing the center of the paper to bulge toward the print head 6 as the paper is transported. In such cases, part of the leading edge of the roll paper S may contact the bottom guide surface 171 of the guide member 17a of guide frame 17, and will then be guided across the step formed by the guide surface 300 of the guide member 30b and the bottom guide surface 171 without being caught, and further guided to the cutter part 30a.

After the roll paper S is loaded, the print head 6 is driven, and the transportation roller 24 is rotated, based on a signal from a circuit board not shown in the figures to print on the roll paper S.

As will be understood from the figures and the above description, it is not necessary to operate a guide member such as that used in a conventional printer when loading roll paper S in a printer according to the preferred embodiment of the present invention. Ease of operation is thus excellent, it is not necessary to care for a clear and straight leading edge of the roll paper, and yet paper jams occurring when inserting the roll paper S can be prevented.

Furthermore, the roll paper S is loaded in a printer according to the present embodiment by simply inserting the leading edge thereof between the holder 23 and base member 29. The roll paper S is then loaded automatically and reliably, significantly improving the ease and efficiency of paper loading.

Printing to cut-sheet form V is described next with reference to Fig. 7. In this case the actuator 27 is driven to separate the guide member 30b of the frame member 30 of platen unit 16 from the guide member 17a of the guide frame 17 of paper transportation frame 3. This operation forms the transportation path for the cut-sheet form V, and widens the gap between the platen 33 and print head 6. As will be understood from the foregoing description, roll paper that may have been loaded before, is held across its entire width between guide support member 34 and base member 29 upstream of platen 33 and held at its two lateral edges between guide parts 34a, 34b and guide surface 29a downstream of platen 33. Therefore, when platen unit 16 is turned into its open position, the roll paper turns together with the platen unit thereby clearing the common transportation path between the platen 33 and the print head 6/ink ribbon 20 for insertion of a cut-sheet form. This ensures that the roll paper does not interfere with the cut-sheet form to be inserted.

The cut-sheet form V is then inserted from above to the transportation rollers 13 and 14. The transportation path for cut-sheet form V is formed substantially vertically as shown in Fig. 7, thus making it extremely simple to set a cut-sheet form V into the path.

When the transportation path for cut-sheet form V is thus opened guide member 17a of guide frame 17 is turned by a spring 18 into a position extending farther than print head 6 into the cut-sheet transportation path, i.e., a position offset from the printing plane of the print head 6 toward the platen unit 16. Since the ink ribbon 20 is pressed against the print head 6 by means of pressure parts 21 and 22 as shown in Fig. 2 and Fig. 7, this position of guide member 17a prevents the leading edge of the inserted cut-sheet form V from moving to the print head 6 during insertion, and helps ensure that cut-sheet form V is set into the transportation path without contacting the ink ribbon 20.

When actuator 27 is thereafter driven to rotate the lever member 26, the platen unit 16 rotates back into the closed position thereby narrowing the gap between the platen 33 and print head 6. The cut-sheet form V is then

held between the transportation rollers 13 and 14 and the pressure parts 28a and 28b of the pinch roller 28. At the same time, guide member 30b of frame member 30 abuts thr ugh the cut-sheet form against guide frame 17 thereby causing the guide member 17a of guide frame 17 to be retracted from the transportation path while the cut-sheet form V remains therein.

The print head 6 is then driven to print while moving lengthwise to the platen 33 as the transportation rollers 13 and 14 are rotated to transport the cut-sheet form V upward through the transportation path based on a signal from a circuit board, which is not shown in the figures. The cut-sheet form V is thus printed as desired.

Fig. 8 is a simplified view of the major components in a printer according to an alternative embodiment of the present invention. Note that only the differences between this embodiment and the preferred embodiment described above are explained below.

A printer according to this alternative embodiment comprises a guide member 30d for blocking the cut-sheet transportation path. The platen unit 16 integrates the platen and upper paper guide as in the previous embodiment, and the guide member 30d is supported on the platen unit 16 in a freely rotatable manner. The platen unit 16 is likewise supported as described in the previous embodiment on the main frame in a manner enabling the platen unit 16 to rotate freely in the direction of the arrow.

More specifically, the guide member 30d comprises a guide surface 30f capable of contacting the roll paper S over the full width of the roll paper S, and a support stud 30e projecting outward from both sides of the guide surface 30f. A holder, not shown in the figures, is formed in the platen unit 16 for supporting the support studs 30e in a freely rotatable manner.

A line head 6a comprising a plurality of print wires widthwise to the roll paper S is mounted on the main frame. The line head 6a further comprises on the side thereof opposing the platen unit 16 a leading edge guide 6b. The leading edge guide 6b comprises on the top thereof an inclined face for guiding the leading edge of an inserted cut-sheet form V. Note that the leading edge guide 6b has substantially the same width as the roll paper S.

When roll paper S is inserted to a printer thus comprised, the roll paper S is guided along the platen unit 16 by a guide support member 34 not shown in Fig. 8, and is transported to the line head 6a opposing platen unit 16.

The guide member 30d closes the insertion opening for cut-sheet form V at this time. As a result, the leading edge of the roll paper S contacts the guide surface 30f of guide member 30d, and is transported to the outlet to complete loading.

When printing to cut-sheet form V, an actuator (not shown in Fig. 8) is driven to rotate the platen unit 16 in the direction of the arrow. The guide member 30d rotates with the platen unit 16 in the direction of the arrow, thus forming the cut-sheet form V transportation path. The actuator is again driven after th cut-sheet form V is dropped in from above, thus rotating the platen unit 16 back in the direction opposite the arrow to the position shown in Fig. 8. The guide member 30d contacts the cut-sheet form V at this time, rotating clockwise around support stud 30e, and assuring a transportation path for the cut-sheet form V.

This embodiment of the a printer according to the present invention requires only one guide member, and thus further simplifies the structure of the invention.

It should be noted that the present invention is not limited to the embodiments described above, and can be varied in many ways within the scope of the accompanying claims. For example, the platen unit is described as a rotatable member in the above embodiments, but the same effect can be achieved using a stationary platen unit with a rotatable print unit or a rotatable support member or frame on which the print unit is supported.

While in the first embodiment, it is the guide member on the print unit side and, in the second embodiment, it is the guide member on the platen unit side that is arranged to be retracted from the transportation path in response to a cut-sheet from present in the transportation path, an arrangement in which both a guide member on the print unit side and another guide member on the platen unit side are retractable is also possible. However, the guide member on one side is preferably fixed as a means of defining the cut-sheet transportation path.

In addition, in the above embodiments, of the transportation roller and the pinch roller used for transporting a cut-sheet form V, the former is mounted on the print unit side, and the latter one is disposed on the platen unit. The same effects can be achieved, however, with the transportation roller disposed on the platen unit side, and the pinch roller disposed on the print unit side.

Furthermore, roll paper has been used as exemplary of a continuous recording medium in the above embodiments, but the invention is not limited to roll paper. For example, fan-fold paper and tractor feed pins can be alternatively used. This can be easily enabled by, for example, using a sprocket wheel with protruding feed pins for the continuous form transportation means.

The present invention is, furthermore, not limited to wire dot printers. It will be obvious that the invention is equally suitable to ink jet printers, but is particularly useful when applied to a wire dot printer for printing to pressure-sensitive, multiple part forms, or to printers using an ink ribbon.

Claims

1. A printer comprising:

   a first transportation path for transporting a cut-sheet recording medium (V),

a second transportation path for transporting a continuous recording medium (S),

a common transportation path shared by said first and second transportation paths,

printing means (6, 6a, 20) and platen means (33) disposed opposite to each other via said common transportation path,

first support means (3) for supporting said printing means and second support means (16) for supporting said platen means (33) such that said printing means (6, 6a, 20) and said platen means (33) are movable relative to each other between a first and a second position with a gap between said platen means and said printing means in said second position being larger than in said first position,

separation means for moving said platen means relative to said printing means between said first and second positions, and

guide means (17, 17a, 30, 30b; 30d-30f) at least part of which being movably supported either on said first support means or said second support means (3, 16), said guide means being disposed where said common transportation path separates into said first and second transportation paths and being adapted to

- open said first transportation path when said platen means (33) and printing means (6, 6a, 20) are in said second position relative to one another,
- open said first transportation path in response to pressure applied by a cut-sheet recording medium (V) present in said first transportation path, when said platen means and printing means are in said first position relative to one another, and
- block said first transportation path when said platen means and printing means are in said first position relative to one another and no cut-sheet recording medium is present in said first transportation path.

2. The printer according to claim 1, wherein the guide means comprises a first guide member (17, 17a) supported by said first support means (3) and a second guide member (30, 30b) supported by said second support means (16), said first and second guide members being adapted to contact each other when said platen means (33) and said printing means (6, 20) are in said first position relative to an another, and to form a guide face for guiding either the print side or the opposite side of a continuous recording medium (S), said guide face having a stepped transition between said first and said second guide member such that on the downstream side of said stepped transition in the direction of transportation in said second transportation path, said second transportation path is wider than on the upstream side of the stepped transition.

3. The printer according to claim 1 or claim 2, further comprising

a guide surface (29a) for guiding the rear side opposite to the print side of a continuous recording medium (S), said guide surface being provided downstream of said platen means (33) in the direction of transportation of the continuous recording medium (S), and

a guide element member (34, 34a, 34b) for guiding the print side of the continuous recording medium (S) up to and past said platen means (33) and to said guide surface (29a).

4. The printer according to claim 3, wherein said guide element comprises a guide support member (34) disposed on the downstream side of said platen means (33) and adapted to guide said print side of the continuous recording medium (S) across substantially its entire width up to said platen means (33), and two lateral guide parts (34a, 34b) for guiding the two lateral sides of the continuous recording medium past said platen means (33) and to said guide surface (29a).

5. The printer according to any of claims 1 to 4, wherein one of a cut-sheet transportation roller (24) and a cooperating pinch roller (25) is supported on said first support means (3) while the other is supported on said second support means (16), said rollers (24, 25) are separated from each other so as to enable a cut-sheet recording medium (S) to be inserted into said first transportation path in between said rollers, when said platen means (33) and said printing means (6, 6a, 20) are said second position relative to one another, and said rollers (24, 25) are pressed against each other so as to transport a cut-sheet recording medium pinched between them, when said platen means (33) and said printing means (6, 20) are said first position relative to one another.

6. The printer according to any of claims 1 to 5, wherein said separation means comprises drive means (26, 27) for rotating said second support means (16).

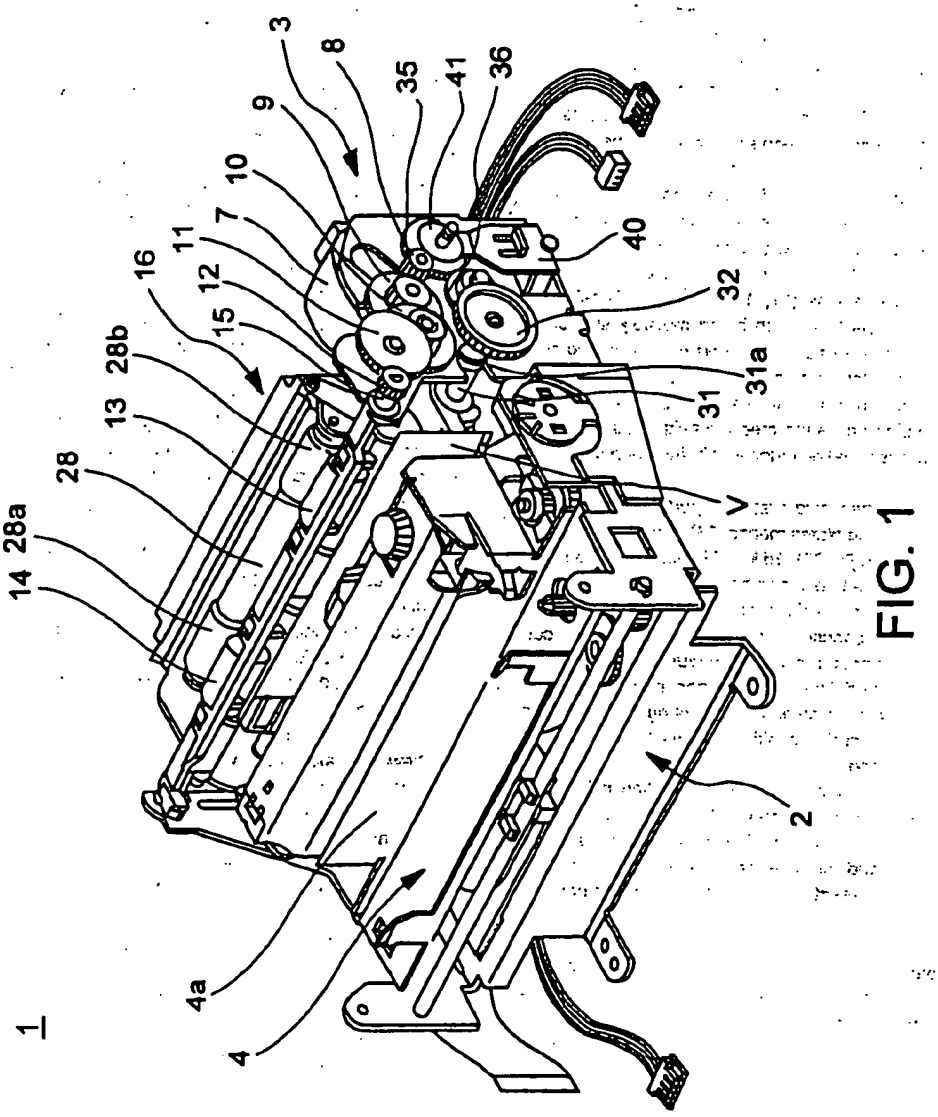

FIG. 1

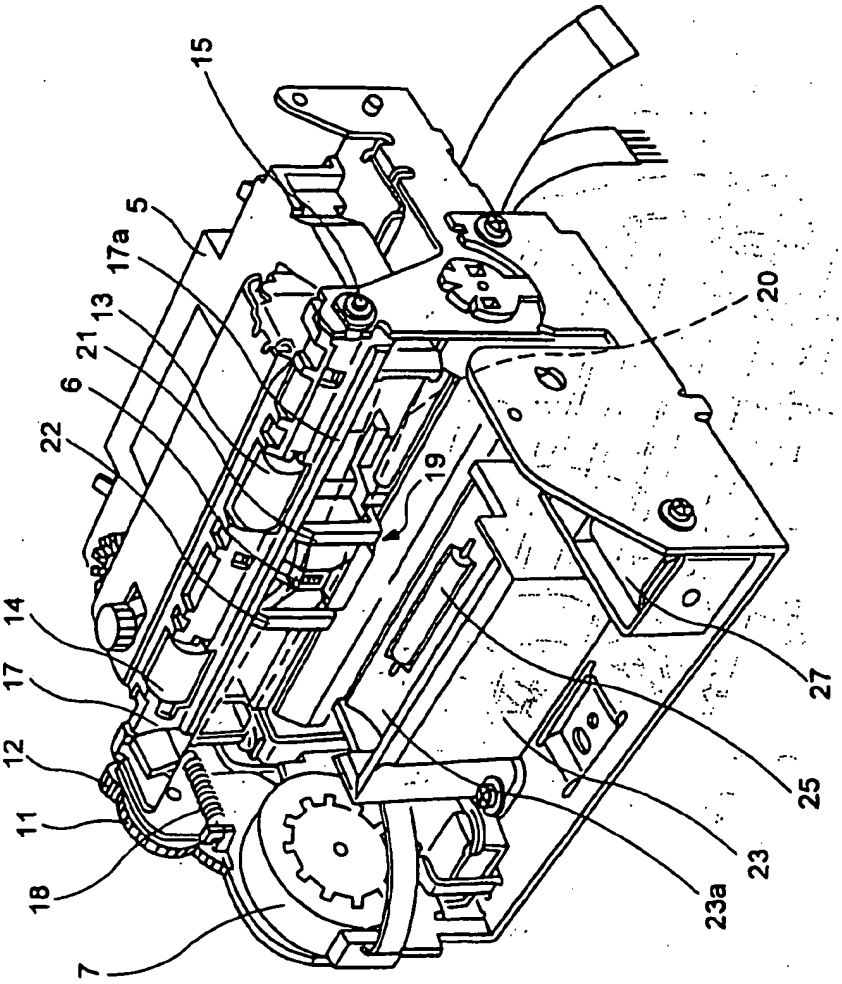

FIG. 2

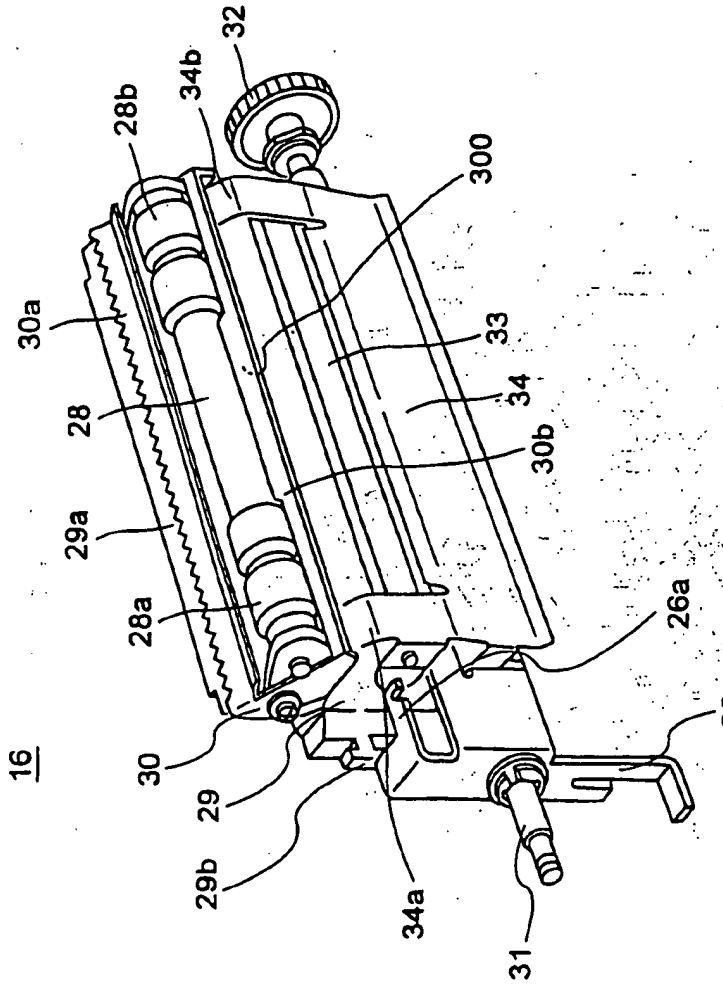

FIG. 3A

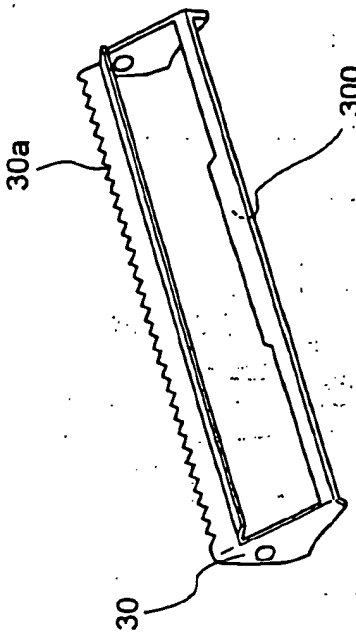

FIG. 3B

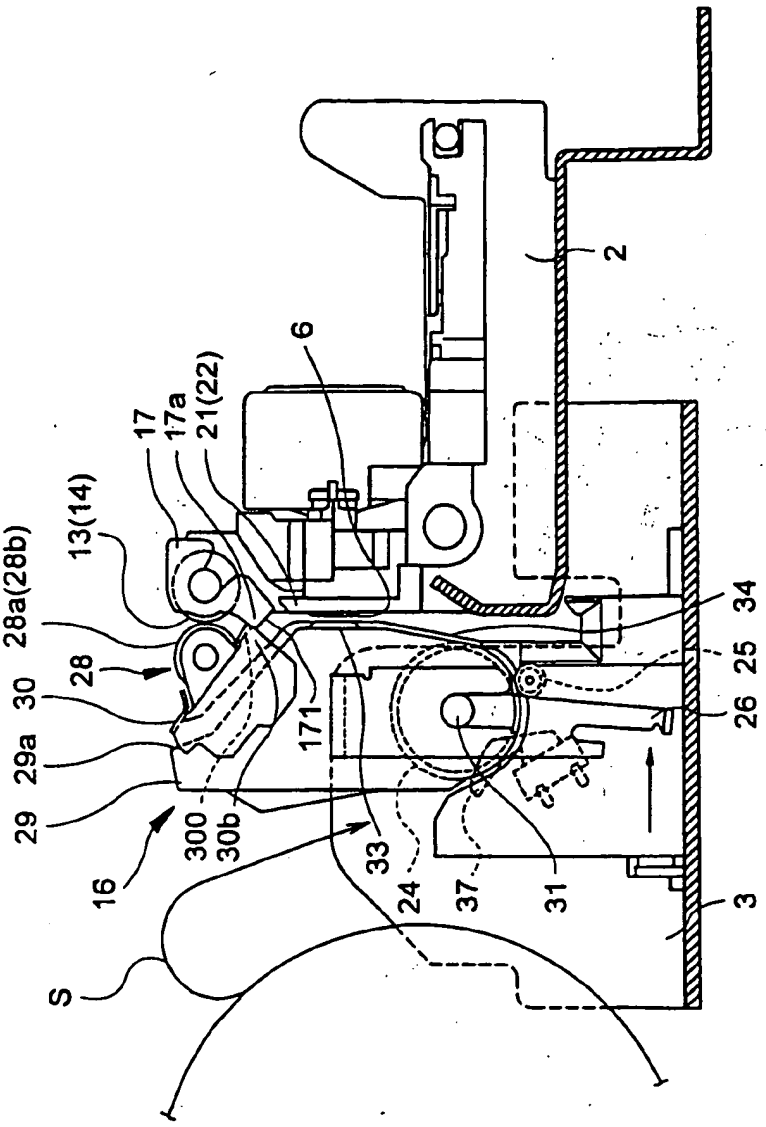
2
6
17
17a
21(22)
13(14)
28a(28b)
28
30
29a
29
16
S
300
30b
171
33
24
37
31
34
25
26
3

FIG. 4

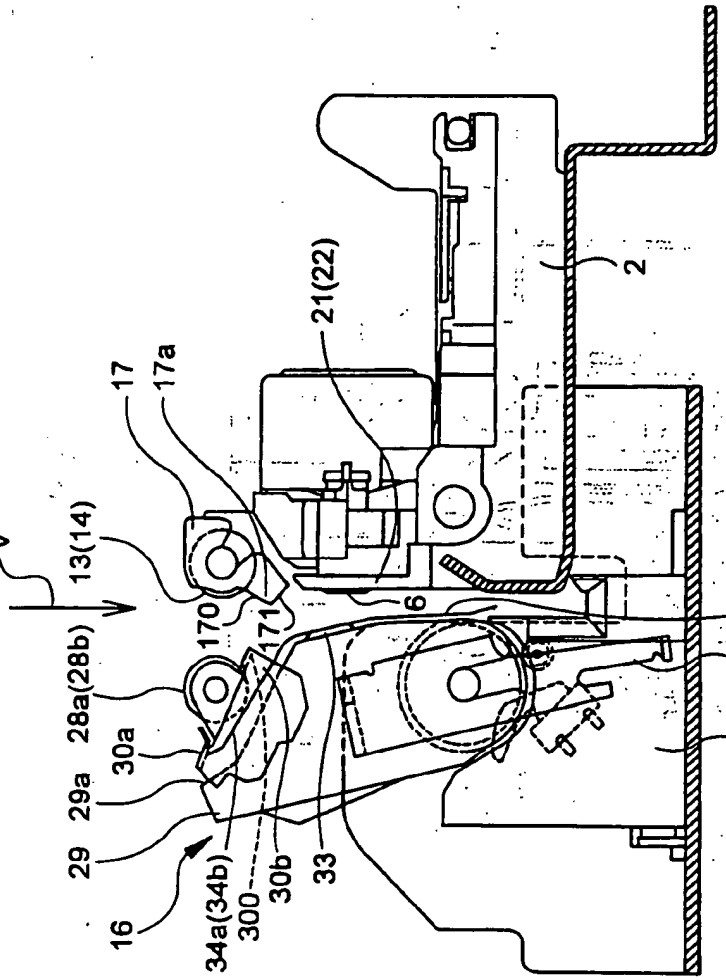
V
13(14)
28a(28b)
30a
29a
29
16
34a(34b)
300
30b
33
170
171
6
17
17a
21(22)
2
34
26
3

FIG. 5

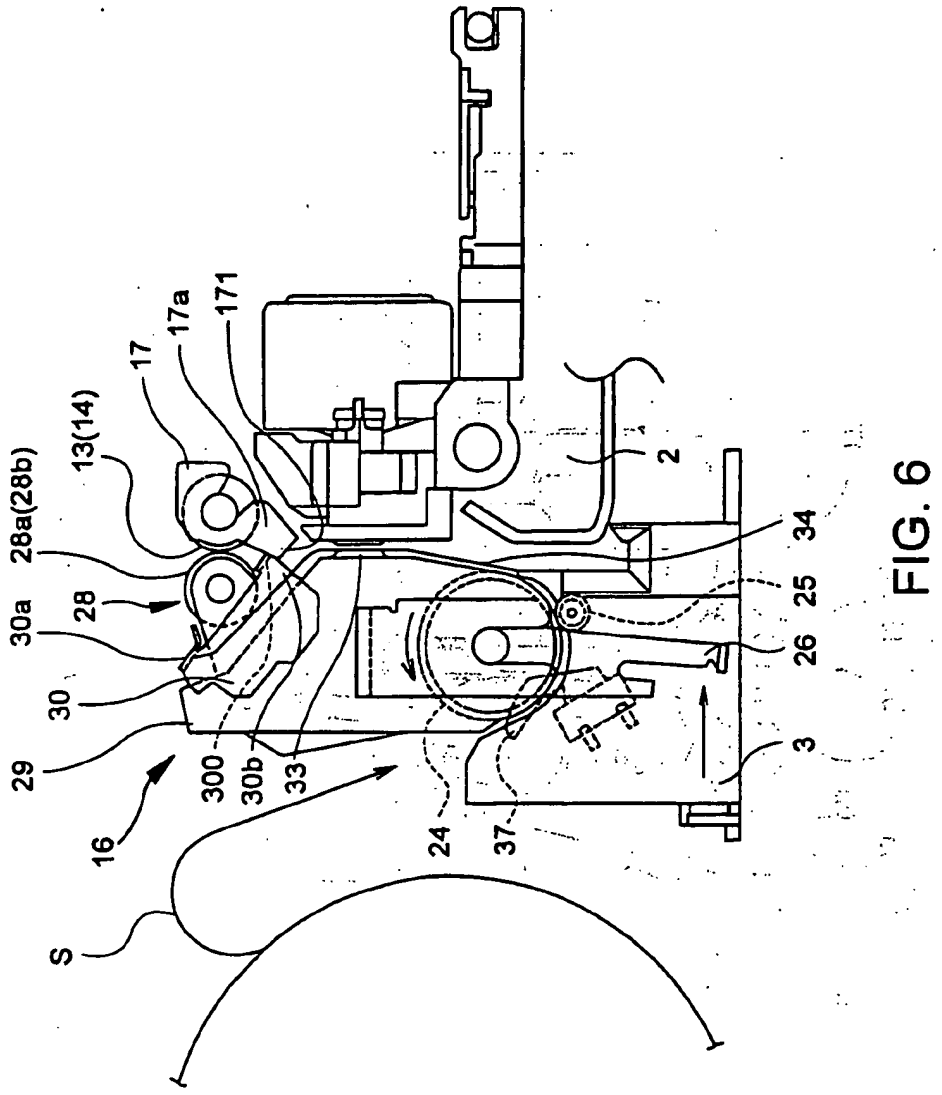
171
17a
17
13(14)
28a(28b)
28
30a
30
29
16
S
300
30b
33
24
37
2
34
25
26
3

FIG. 6

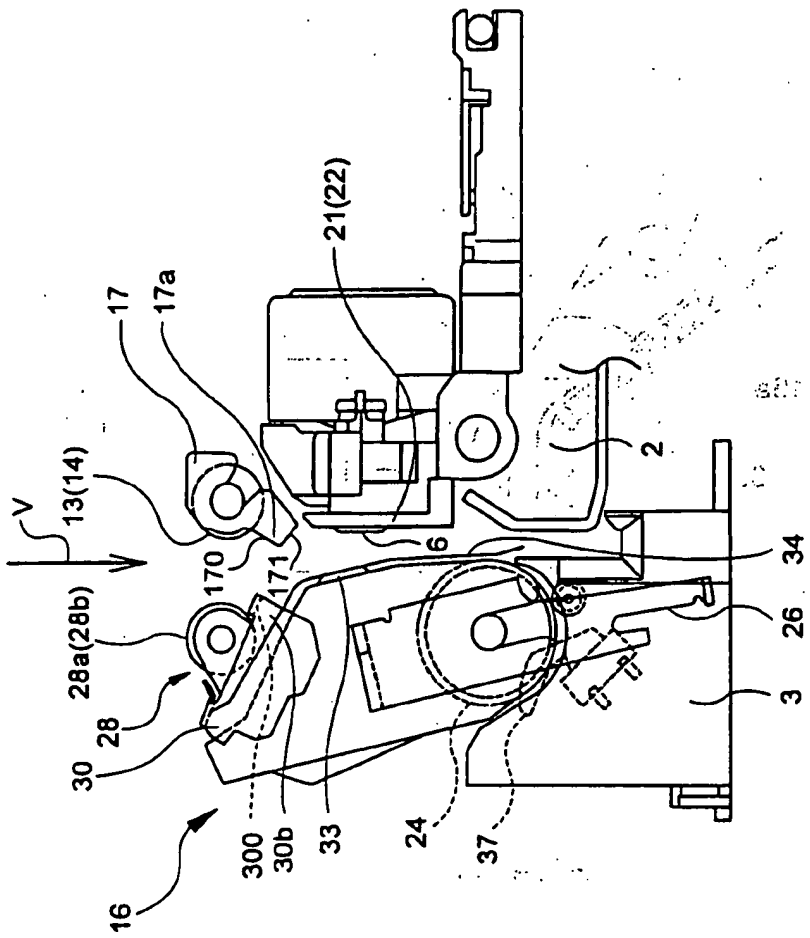
V
13(14)
17
17a
21(22)
2
6
34
26
3
170
171
28a(28b)
28
30
16
300
30b
33
24
37

FIG. 7

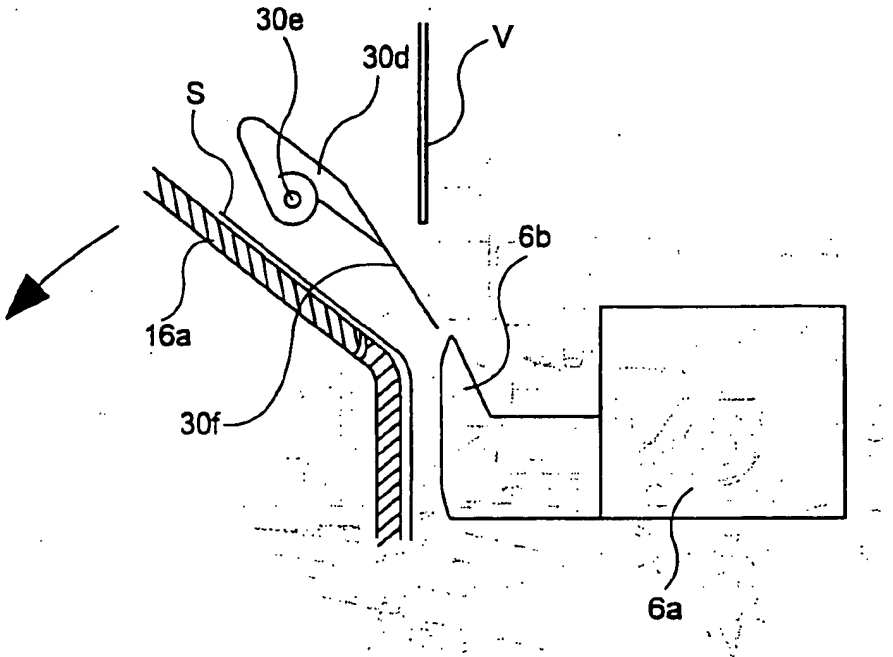

FIG. 8